

Exhibit AM



March 9, 2020

Mr. Alex V. Chachkes
Orrick LLP
51 West 52nd Street
New York, NY 10019

Mr. Kevin Hynes
King & Spalding LLP
1185 6th Avenue
New York, NY 10036

Re: Rebuttal of MAS Zimmerman Report

Mr. Alex Chachkes and Mr. Kevin Hynes:

I have reviewed the testing of the two bottles produced in reference to the Zimmerman case by Dr. Longo and MAS dated February 24, 2020. In this report Dr. Longo alleges to have identified chrysotile using a procedure used by the Colorado School of Mines (CSM) which utilized a 1% Iodine in glycerin solution, which was based on the work described by Morton and Baker (1941)¹ for the staining of chrysotile fiber compared to other asbestos fiber types (amphibole). The use of iodine staining in and of itself is questionable as it is a presumptive test, the use of standard PLM using dispersion staining techniques is not presumptive and allows the actual measurement of the unique optical properties of chrysotile allowing identification. Thus, the use of iodine staining is neither equivalent nor superior to existing standard techniques.

The MAS methodology and conclusions are unreliable and erroneous for the following reasons:

- 1) Dr. Longo has failed to follow the procedure as outlined by CSM.
- 2) Using the iodine staining procedure as described on both of the Zimmerman samples, RJ Lee found no stained particles with morphology consistent with chrysotile.
- 3) The effect of staining chrysotile has limited usefulness as it does not stain all chrysotile particles and also stains the non-asbestos varieties of serpentine, along with other minerals. Thus, a stained particle cannot be reliably identified. The iodine staining is a presumptive test for chrysotile and would require additional confirmatory testing if a positive result was encountered.

¹ Morton, M. and Baker, W.G. (1941) Identification Stain for Chrysotile Asbestos. Canadian Institute of Mining and Metallurgy. Trans., Vol. 44, pgs. 515-523.

- 4) The usefulness of the staining is on particles or portion of serpentine particles that are damaged or “fluffed up”, as stated by Heide et al. (1949)² and is visually demonstrated in this report.
- 5) The refractive index and morphological evidence presented by Dr. Longo to support the alleged findings do not have the refractive indices nor the morphology of chrysotile and therefore cannot be chrysotile.
- 6) Particles reported by MAS as chrysotile have optical properties that are consistent with talc.

In the February 26, and April 2, 1973 CSM reports cited by Dr. Longo, CSM are employing density separation techniques and analyzing both the light and heavy fractions using powder X-ray diffraction and petrographic microscopy. There were two separations used one was 2.65 specific gravity (sg) and analyzed for chrysotile, the other was > 2.90 sg fraction was analyzed for tremolite. After the separation of the < 2.66 sg fraction a portion was taken and immersed in a 1% iodine in glycerin solution to identify if any chrysotile was present.

Dr. Longo applied the iodine stain to 1 gram of talc before any density separation took place, which is contrary to the procedure described by CSM. In fact, Dr. Longo rinsed the stained sample prior to performing his separation, see page 5 and 6 of the MAS report:

“The talcum/iodine solution in the scintillation vial is rinsed onto a 47 mm MCE filter (0.4 micron pore size) with 15 ml of 50/50 solution of methanol and DI water. This step is repeated just DI water until the talcum powder on the filter turns from amber brown to white. This step is repeated just DE Water until the talcum powder on the filter turns from amber brown to white. This step usually takes 3-5 washes”.

An example of the effectiveness of the iodine staining is shown in Figure 1a on a ground portion of NIST 1866 chrysotile SRM. Note the effect of the iodine staining causing portions of the chrysotile to be stained amber brown in the image. In Figure 1b, the top pair of images are the effect of staining the chrysotile then rinsing it in accordance to the process described by MAS until the amber brown color is no longer visible. Thus, by rinsing the iodine stained sample some of the staining effect is lost. If there were particles of chrysotile of a fine particle size they would likely nullify the relative effectiveness of the iodine staining. The bottom pair of images are taken from the MAS report where they report chrysotile in 1.550 oil, note that no staining is visible. Furthermore, none of the plane light images of the alleged chrysotile by MAS show any indication of iodine staining.

² Heide, H.E., Wright, W.S., and Rutledge, F.A. (1949) Investigations of the Kobuk River Asbestos Deposits, Kobuk District, Northwestern Alaska. Report of Investigations 4414. United States Department of the Interior, Bureau of Mines.

The specificity of the iodine stain to chrysotile is also problematic and caution must be used for any stained particles. As described by Morton and Baker other serpentine minerals that are not asbestos will also be stained by this technique. Thus, if non-asbestos serpentine is present the staining would result in a false positive. Figure 2 in the top image demonstrates the effect of the iodine staining on ground serpentine. The majority of the particles in the field of view are serpentine (non-asbestos), note that the iodine stains the particles that appear abraded and does nothing to the particles that are not.

Figures 1 also illustrates the effect of staining on an unground portion of the NIST 1866 chrysotile where the iodine is only staining the ends. This effect was described by Heide et al. 1948 as the effect of “fluffing.” Figure 2 illustrates the preferential staining of abraded portions of bulk serpentine.

We analyzed each of the Zimmerman bottles using the 1% Iodine stain as described in the CSM report and the Morton and Baker publication to an analytical sensitivity of seven and 17 particles per gram (p/g), or 4.3e-6 and 1.0e-5 ppm respectively. Concentration of stained particles was seven and 68 p/g, and 1.9 and 42 ppm respectively. Figure 3 shows non-asbestos iodine stained particles by the iodine solution from both samples. Also see appendix A for a more detailed report on this approach.

The generally recognized scientific methods that require PLM all require the measurement of morphology, refractive indices (in both the length and width orientations), birefringence, sign of elongation, color and description of pleochroism, and extinction angle. Each of these measurements must be consistent with a specific species of asbestos in order to positively identify asbestos. Once a sample is stained with iodine where the iodine attaches there is no way to measure the refractive indices, thus reliance of the staining only would not allow positive identification by generally accepted methods. The refractive index cannot be measured of a stained particle because the particle must be in direct contact with the refractive index liquid to make those measurements. This is also illustrated in Figure 1b with the top pair of images, where the stain is present the dispersion staining is incorrect. Where the stain has been rinsed off, the dispersion staining colors are correct for chrysotile 1866. Thus, if a particle is iodine stained it is not possible to measure the refractive indices and it is impossible to determine if what is being observed is chrysotile or another species of serpentine (which would not be asbestos), or another phase susceptible to iodine staining.

After MAS washed the iodine stain from the sample by rinsing as described above, they then report chrysotile based on the measurement of the optical properties, from MAS report page 6:

“Positive identification of chrysotile asbestos bundles is then done by morphology, refractive indices, elongation, angle of extinction and birefringence as described in ISO 22262-1 PLM Method.”

This raises the question, what was the purpose of the iodine staining step? Considering that they first washed the iodine from the material then relied upon the refractive indices to identify chrysotile as required by the standard methods. More concerning is the fact that they report chrysotile by using the refractive indices where the observed refractive indices do not match those of chrysotile. Thus they have not identified chrysotile.

Figure 4 illustrates the dispersion colors of chrysotile for NIST 1866 lengthwise and perpendicular to the fiber elongation. The top pair of images are taken directly from ISO 22262-1 while the middle pair of images were taken at RJLG using the NIST 1866 reference material. Each of these images is taken in 1.550 refractive index liquid. Contrast the colors observed with the images of the alleged chrysotile in the MAS report (example bottom paired image from MAS report). Not one of the particles presented by MAS have the refractive indices of chrysotile. Therefore, there is no chrysotile present in these samples as attested by the report of the same two bottles analyzed by RJ Lee Group using both an iodine staining approach and analyzing these same samples using standard methods.

This raises another question, if these particles are not chrysotile, then what are they? These particles are talc. Figure 5 illustrates another image from the MAS report where the dispersion staining colors are incorrect in the top paired images if the particles were chrysotile. The bottom paired images are of talc with a bent edge. Where the edge of a talc sheet are bent the refractive index in this orientation parallel with the lower polarizer, you have a near refractive index match in a 1.550 liquid. Figure 6 is an SEM image of a talc sheet bent with the refractive indices shown for the orientations presented. Also attached as Appendix B is additional information regarding optical orientation of talc and its affect in various refractive index liquids.

In summary, MAS has not found chrysotile but have erroneously reported talc particles as chrysotile asbestos. This is evident by the lack of any iodine stained particles and particles with refractive indices consistent with talc being reported as chrysotile. Therefore, there is no chrysotile present in these samples as attested by the report of the same two bottles analyzed by RJ Lee Group using both an iodine staining approach (discussed in this report) and analyzing these same samples using standard methods.

I reserve my right to supplement this report if more information becomes available to me. Please let me know if you have any questions.

Sincerely,



Matthew S. Sanchez PhD
Principal Investigator
msanchez@rjleegroup.com

Attachments:

Appendix A – Iodine staining analysis of the two Zimmerman samples.

Appendix B – Refractive indices of talc in 1.586 and 1.550 liquids.

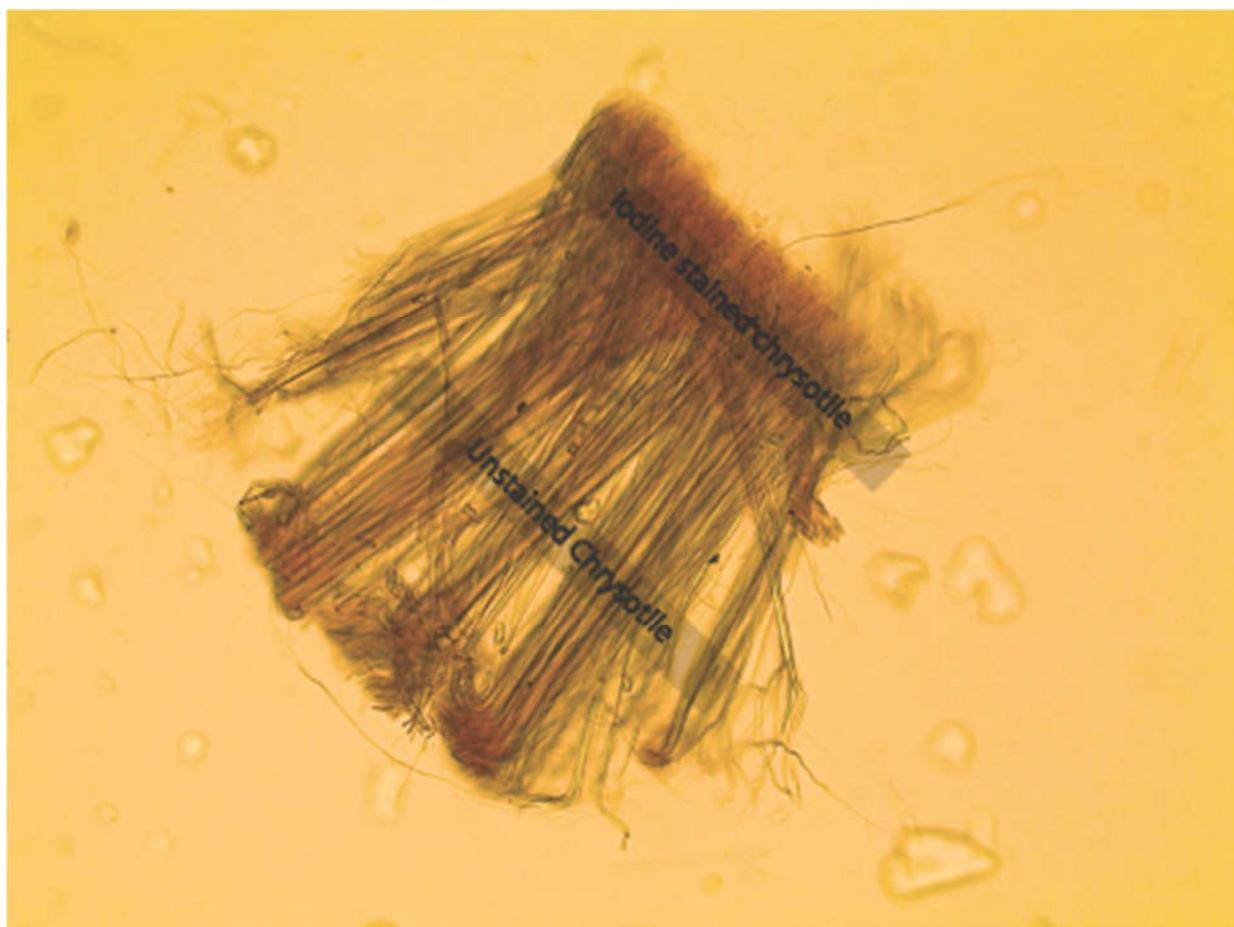


Figure 1a. Image is NIST 1866 chrysotile SRM in 1% Iodine solution, note the effect of the staining on the abraded edges of the chrysotile, also note the longitudinal splitting of the asbestiform habit.

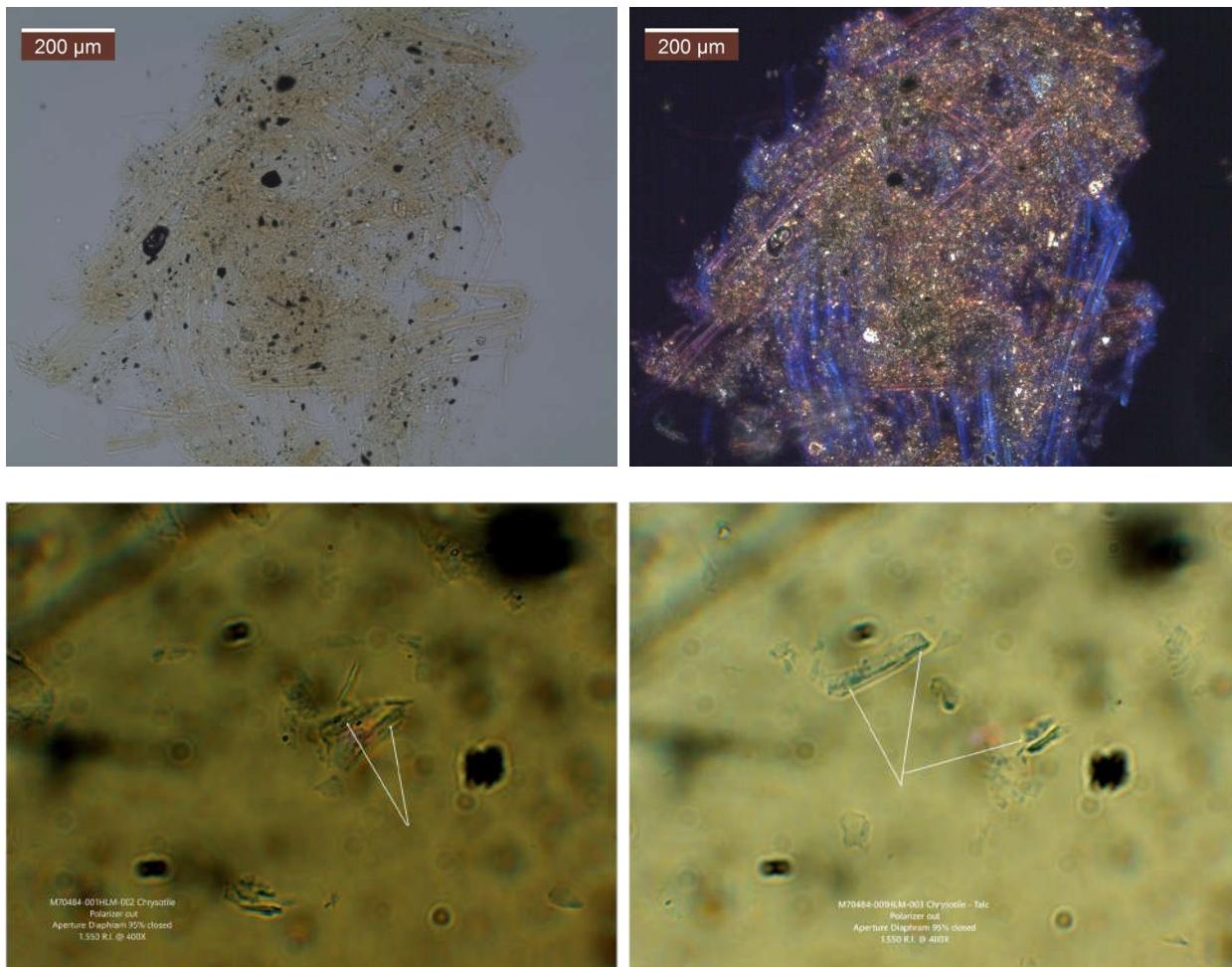


Figure 1b. The upper pair of images are of previously stained chrysotile after rinsing, note the partial loss of the effect of the iodine staining at the edges. This is more evident in the top right image where the dispersion staining blue color is seen only where the iodine is not. The lower pair of plane light images are taken from the MAS report where no staining is observable. This is not due to it being washed off but due to the fact that these particles are not chrysotile or serpentine, but in fact are talc.

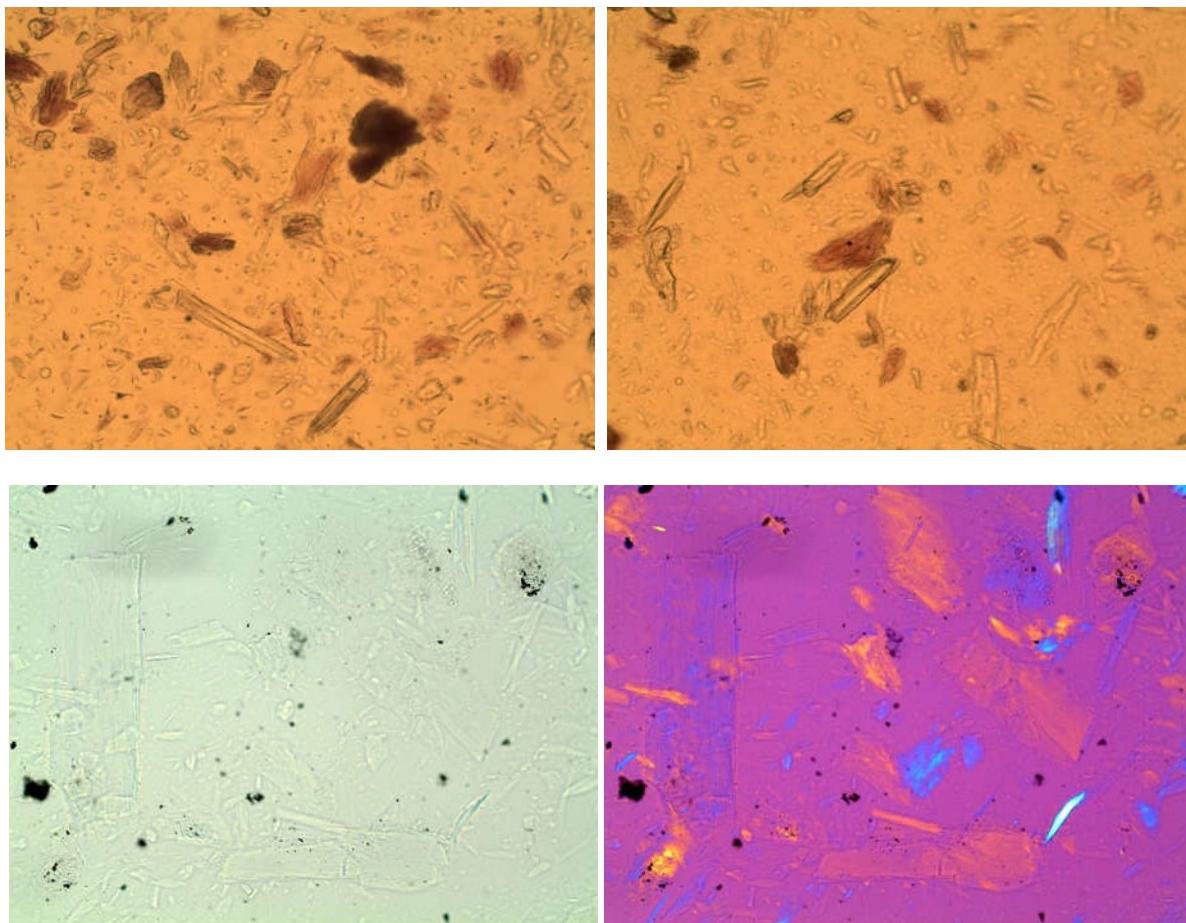


Figure 2. The upper pair of images are bulk serpentine and the effect of the iodine stain. Note that although the majority of the particles in the field of view are serpentine group minerals only a small portion are stained and those that are stained are not chrysotile. The lower pair of images are the same serpentine sample immersed in 1.550 liquid in both plane (left) and cross polarized light (right). Note that the iodine is effective only on the more abraded and less crystalline serpentine particles.

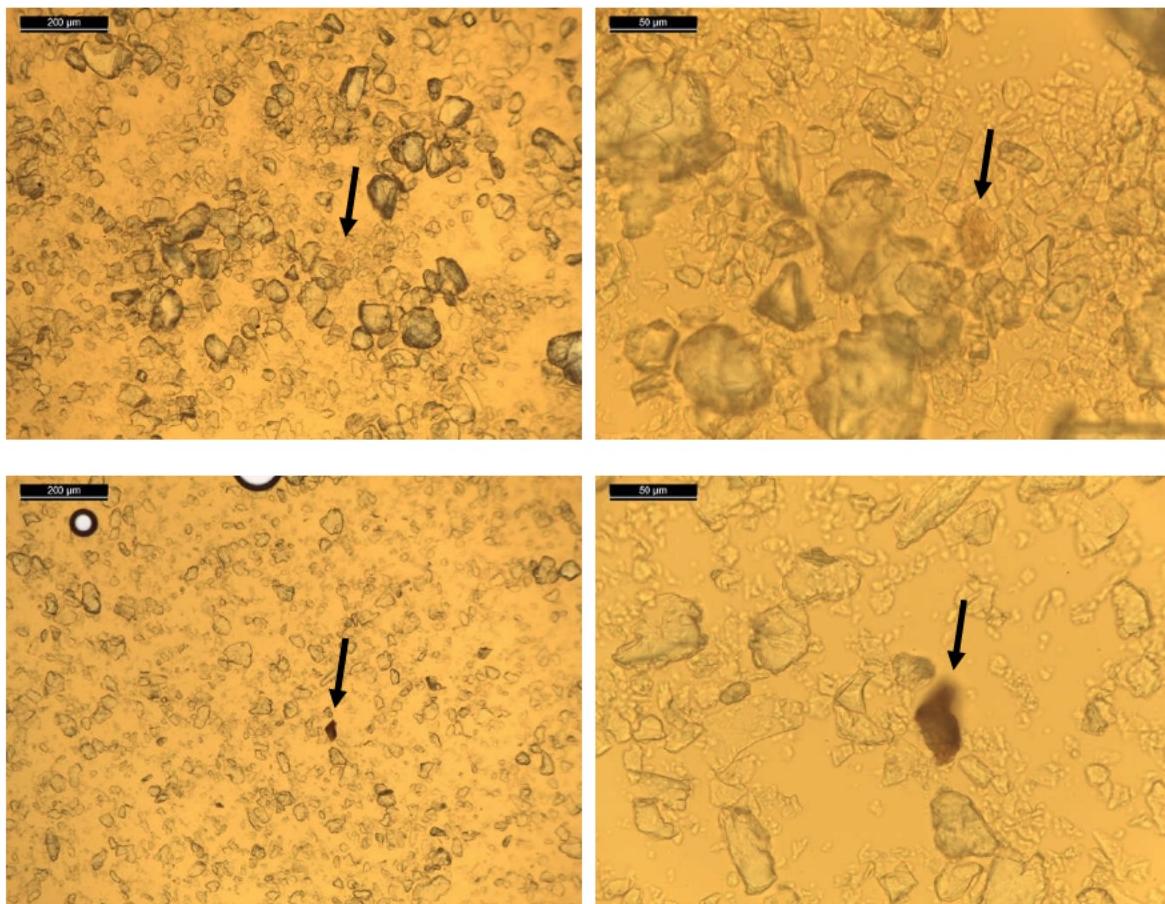


Figure 3. Examples of stained non-asbestiform particles in sample 3161014 (top) and 3161015 (bottom).

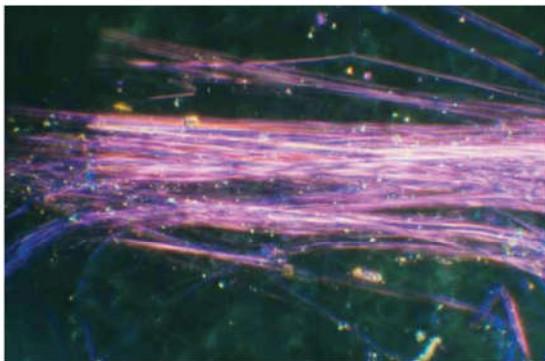


Figure D.3 — SRM 1866 chrysotile in 1,550 RI liquid viewed in dispersion staining — Fibre length parallel to polarizer vibration direction

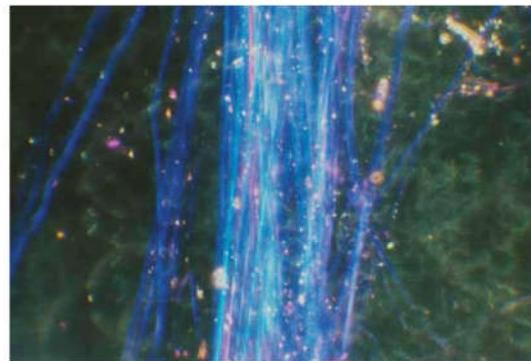


Figure D.4 — SRM 1866 chrysotile in 1,550 RI liquid viewed in dispersion staining — Fibre length normal to polarizer vibration direction

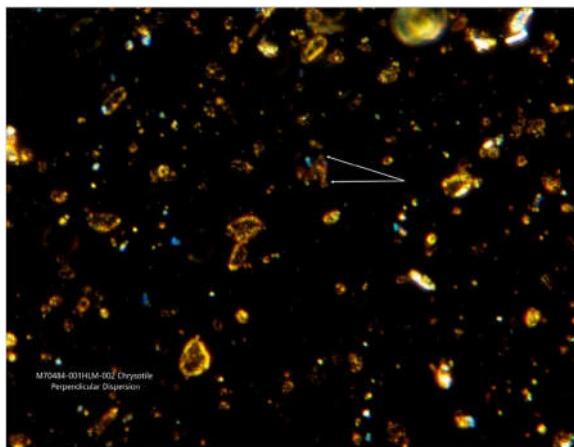
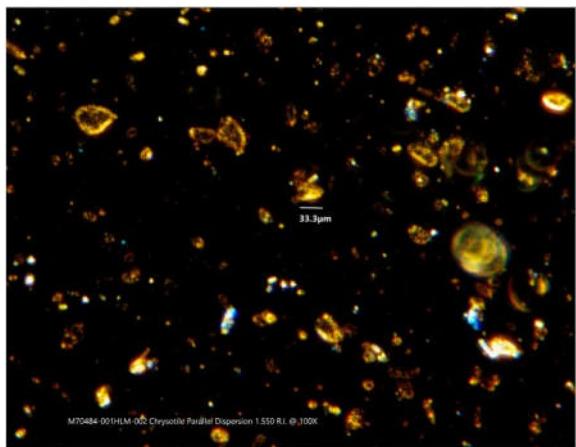
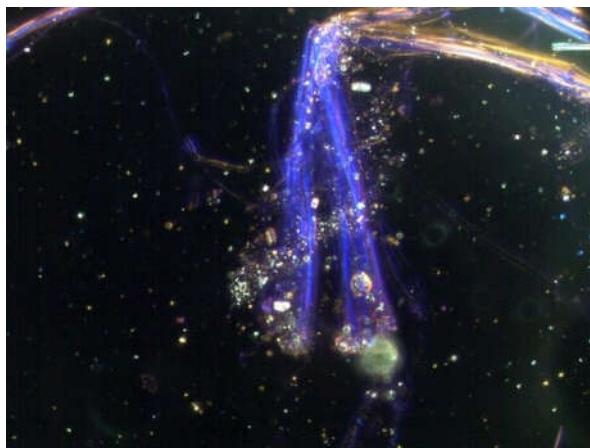
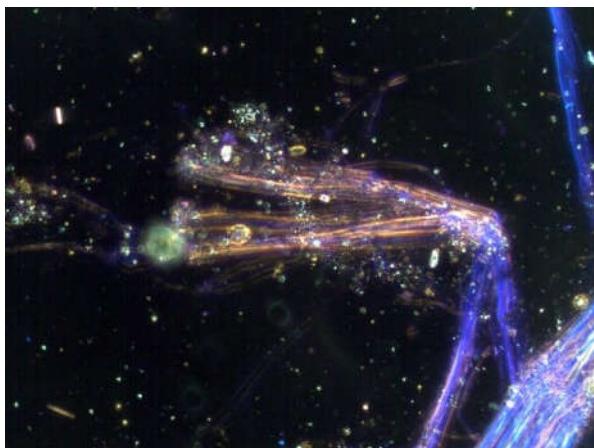


Figure 4. Dispersion staining colors for chrysotile parallel and perpendicular to the lower polarizer in 1.550 refractive index liquid. The upper pair is taken from ISO 22262-1 page 43. The middle pair was taken of the NIST 1866 chrysotile sample in 1.550 liquid at the RJ Lee Group. The lower pair is taken from the MAS report reporting chrysotile in M70484-001. The dispersion staining colors in the lower pair, which correlate to refractive indices, are not correct for a match to chrysotile. It is also significant to note that the morphology illustrated in the lower pair of images is not asbestosiform.

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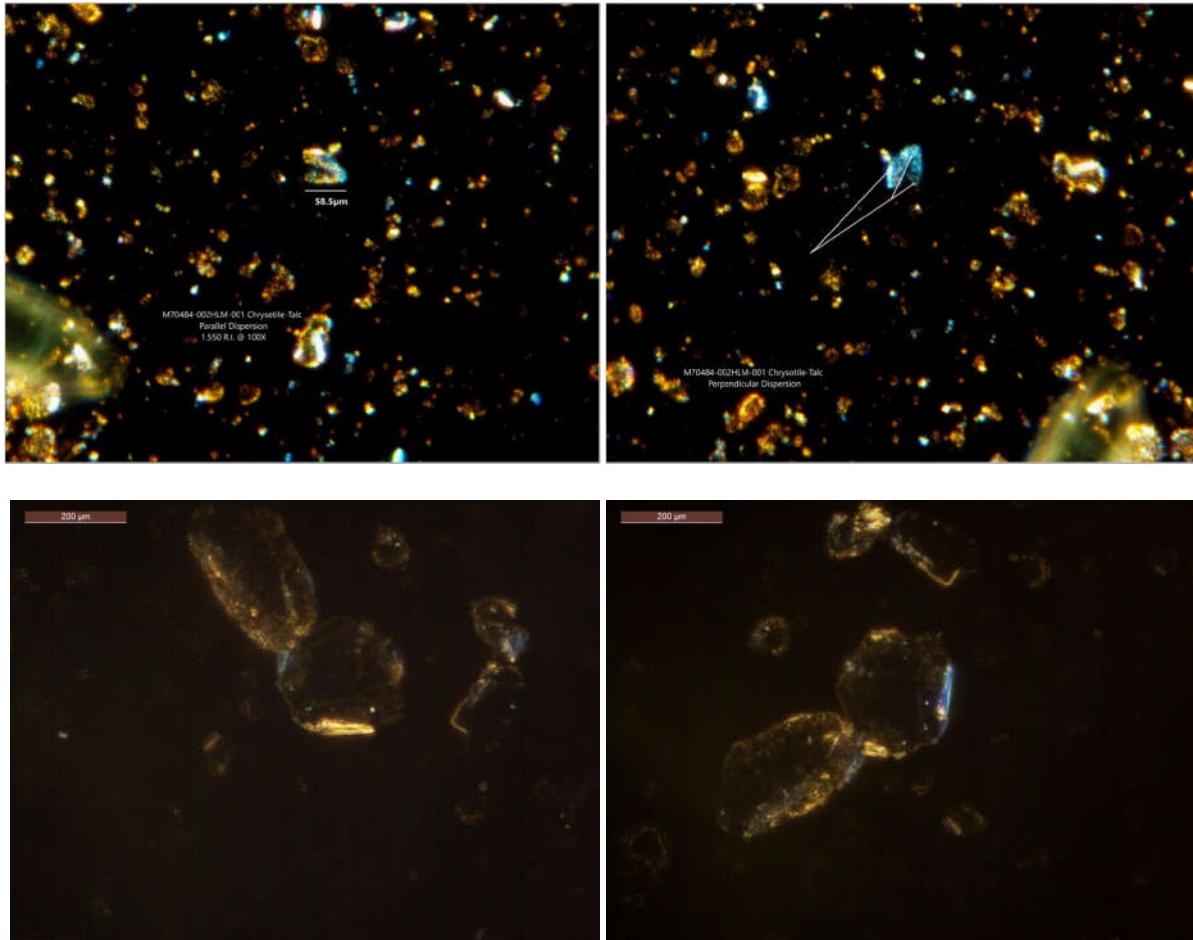
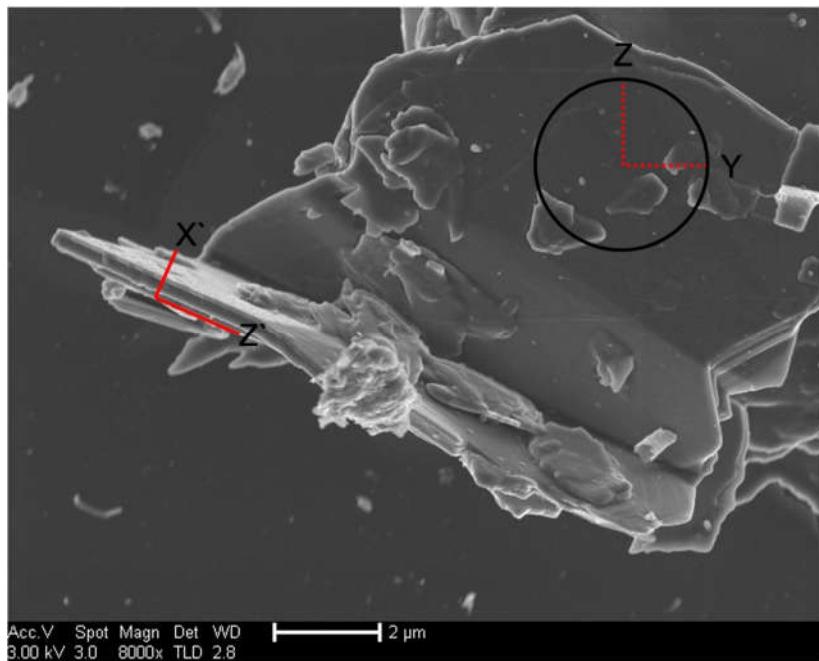


Figure 5. The upper pair is taken from the MAS reporting of chrysotile in M70484-002. Similar to the particles shown in Figure 4 and consistent with all the particles observed and reported as chrysotile by MAS, the refractive indices are too high relative to chrysotile. The lower pair of images is taken from the same sample by RJLG in 1.550 liquid and is simply a curled edge of a talc particle.



X = 1.538 - 1.554

Y = 1.575 - 1.599

Z = 1.575 - 1.602

Measured 001 sections
Yield ~1.584 refractive
index values in the 001
plane. Birefringence is
small.

Folded or bent edges
yield near 1.550 refractive
index values in sections
perpendicular to the
plane of the sheets

Figure 6. SEM image with optical orientation with principal vibration directions and corresponding refractive indices as a function of talc plate orientation.



Appendix A
Iodine staining analysis of the two Zimmerman samples



March 9, 2020

Mr. Alex V. Chachkes
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51 West 52nd Street
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Mr. Kevin Hynes
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1185 6th Avenue
New York, NY 10036

Re: Examination of Johnson's Baby Powder using Iodine Stain

Mr. Alex Chachkes and Mr. Kevin Hynes:

RJ Lee Group (RJLG) has completed the analysis of two baby powder samples associated with the Zimmerman case acquired from MAS on September 12, 2019. In addition to XRD, TEM, and PLM reports by conventional methods reported February 24, 2020. This report describes the results of the samples analyzed using the iodine staining technique described by Morton and Baker in 1941¹.

No stained asbestosiform particles were observed, thus no particles that could be chrysotile were observed in either sample using the iodine stain. Non-asbestosiform stained particles were observed in both samples by PLM. It could not be determined what mineral these stained particles are based on the use of the iodine stained technique.

Sample Analysis

Six slide preparations were made by weighing out a mass of talc onto a glass slide, adding two drops iodine in place of refractive index liquid, and covering with a glass coverslip. The mass of the talcum powder added was recorded for each slide in mg. Each slide mount was scanned in its entirety for any stained or asbestosiform stained particles. Any stained particles were examined as to morphology and photographed (Figures 1-5). Additionally, slides of ground serpentinite rock and NIST 1866 chrysotile were prepared in the same manner as references for comparison.

¹ Morton, Maurice, and W. G. Baker. "Identification Stain for Chrysotile Asbestos." Trans. Canadian Inst. Min. and Met 44 (1941): 515-523.

The analytical sensitivity (AS) of this analysis was calculated as the number and mass of one PCM fiber divided by the total mass analyzed. The dimensions of the PCMe fiber used for the sensitivity calculation were 5 µm x 0.25 µm. The PLM results are summarized in Table 1 in particles per gram, weight percent, and parts per million. Stained asbestos means stained particle with asbestosiform habit, chrysotile would belong in this category. Stained particles could be a number of interference minerals. Interferences in the technique exist due to the fact that minerals other than serpentine or chrysotile can be stained. Morton and Baker reported olivine, brucite and hydro-magnesite were stained by iodine. Determining all possible minerals that could be stained by the iodine solution was beyond the scope of this report.

Conclusion

No stained asbestosiform particles were observed during the analysis of these samples. Small amounts of non-asbestos stained particles were observed in both samples but due to the iodine stain optical properties could not be determined, thus there is no way to identify further characterize them with this technique. Thus, when one compares standard methodologies and the ease and reliability of particle identification based on refractive indices and other optical properties and inability to rule out mineral interferences by iodine staining there is no equivalency or superiority to this approach over standard generally accepted XRD, PLM, and TEM testing methodologies for the presence of asbestos in an unknown sample.

If you have any questions related to this report, please feel free to contact me.

Sincerely,



Matthew S. Sanchez, PhD

Principal Investigator

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724 387-1947

Table 1 a-c. Summary of the observations of stained particles with quantitation limit (QL) and analytical sensitivity (AS).*Table 1-a: Summary of QL and AS reported in particles per gram (p/g).*

RJLG Sample ID	Total Mass Analyzed (g)	AS (p/g)	Stained Asbestos (p/g)	Stained (p/g)
3161014	0.1471	7	ND	7
3161015	0.0585	17	ND	68

Table 1-b: Summary of QL and AS reported in weight percent (Wt %).

RJLG Sample ID	Total Mass Analyzed (g)	AS Wt. %	Stained Asbestos (Wt %)	Stained (Wt %)
3161014	0.1471	4.3E-10	ND	1.9E-4
3161015	0.0585	1.0E-9	ND	4.2E-3

Table 1- c: Summary of QL and AS reported in parts per million (ppm).

RJLG Sample ID	Total Mass Analyzed (g)	AS ppm	Stained Asbestos (ppm)	Stained (ppm)
3161014	0.1471	4.3E-6	ND	1.9
3161015	0.0585	1.0E-5	ND	42

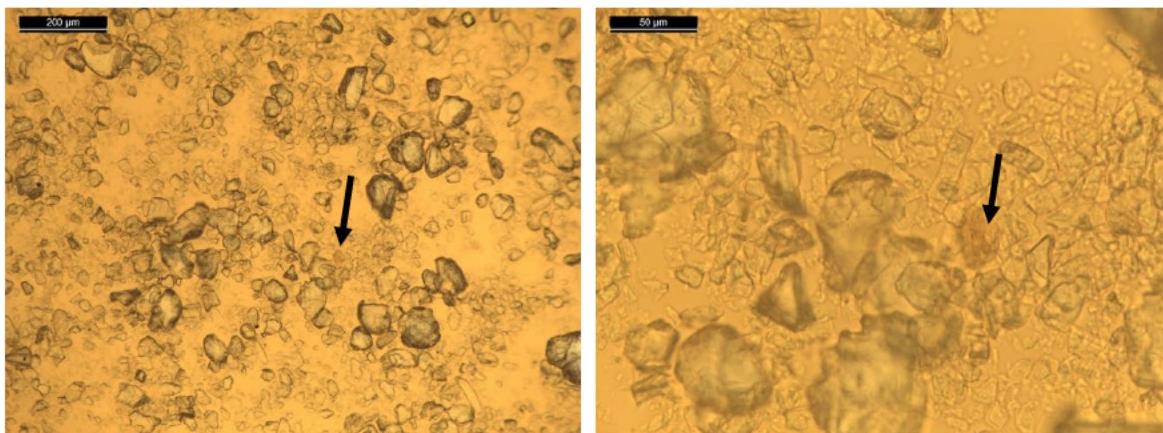


Figure 1. PLM images of stained particle (arrow) observed in 3161014 in plane light in the iodine stain low and high magnifications.

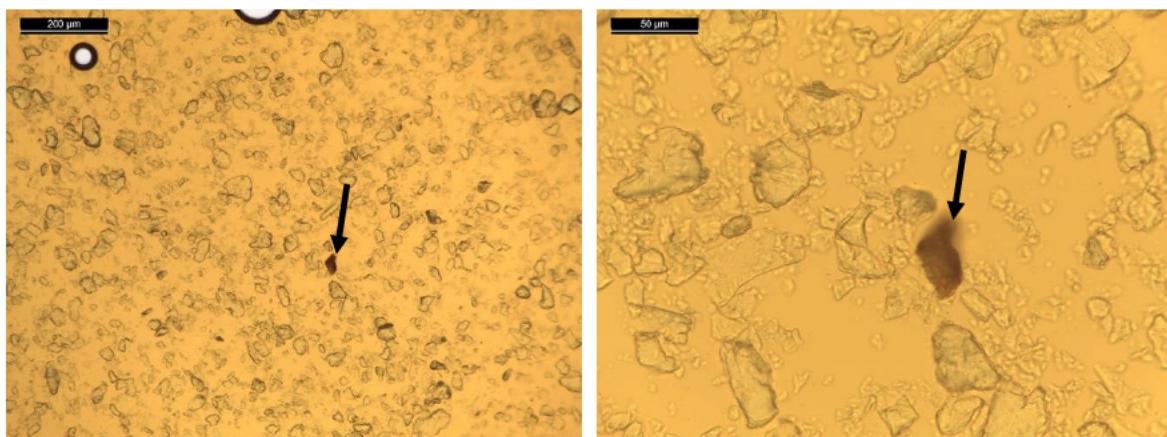


Figure 2. PLM images of stained particle (arrow) observed in 3161015 in plane light in the iodine stain low and high magnifications.

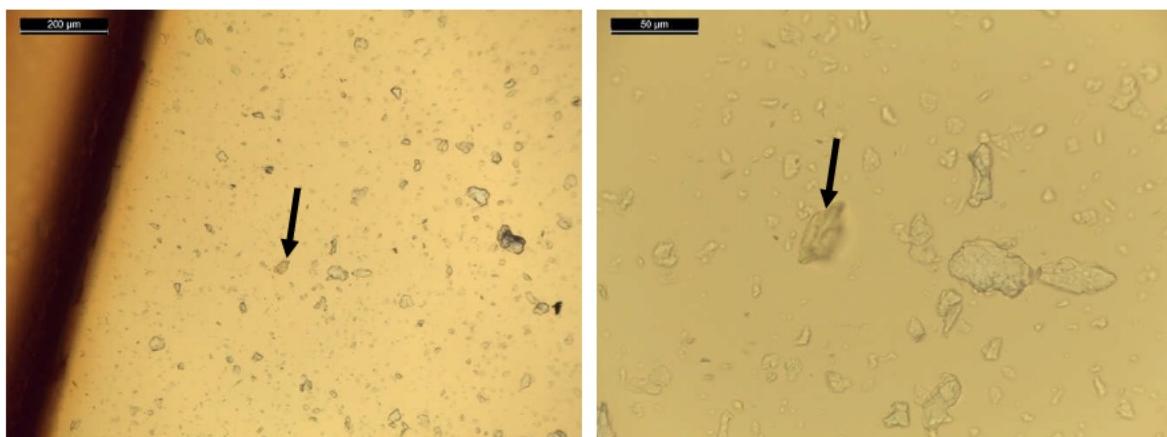


Figure 3. PLM images of possible stained particle (arrow) observed in 3161015 in plane light in the iodine stain low and high magnifications.

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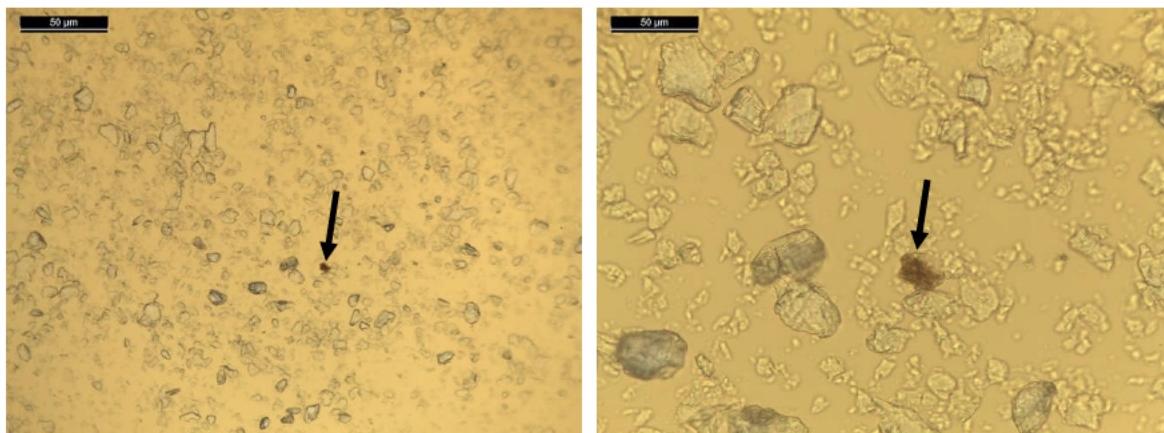


Figure 4. PLM images of stained (arrow) observed in 3161015 in plane light in the iodine stain low and high magnifications.

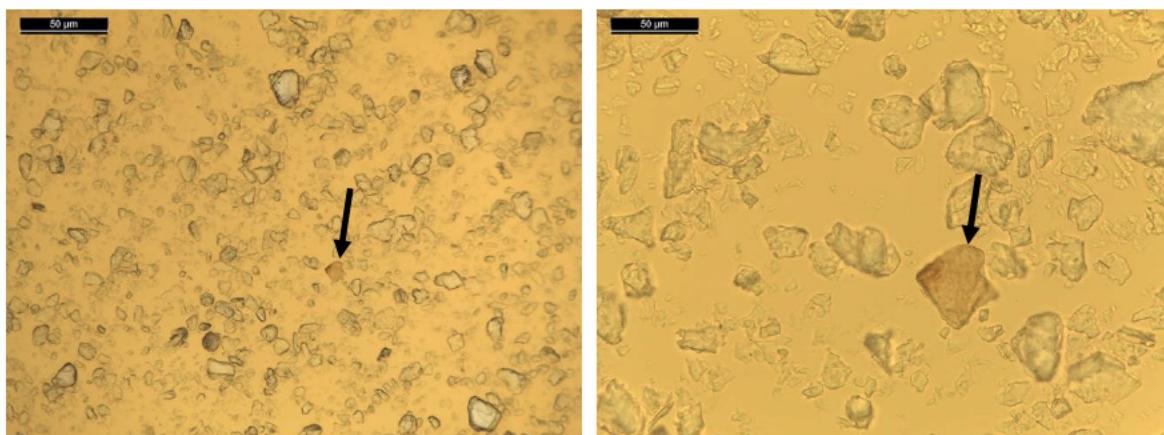


Figure 5. PLM images of stained particle (arrow) observed in 3161015 in plane light in the iodine stain low and high magnifications.

Project #: LLH906295

Sample #: 3161014 Analyst: MMK

Date: 3/3/2020

Sample
Description /

White powder stained with Iodine

Non-asbestos Material %:

<u>Talc</u>	<u>Opales</u>	<u>Misc. Particles</u>
<u>Carbonate</u>		

	Slide 1	Slide 2	Slide 3	Slide 4	Slide 5	Slide 6
Slide Wt. (g) :	5.01620	5.00600	4.99660	4.98060	4.98190	4.97290
Slide + Sample Wt. (g) :	5.08330	5.00830	5.00010	4.98340	5.04960	4.97660
Final Sampe Wt. (g) :	0.06710	0.00230	0.00350	0.00280	0.06770	0.00370
R.I. Oil :	NA	NA	NA	NA	NA	NA

avg mass 0.02452

Sum Mass AS (p/g) AS (Wt%) Wt% p/g
0.14710 7 4.3E-10 1.93E-04 7

Type	Slide 1	Slide 2	Slide 3	Slide 4	Slide 5	Slide 6	Total
Chrysotile	0	0	0	0	0	0	0
Stained	0	0	1	0	0	0	1

Recorded Images

#	Particle Type	Length (μm)	Width (μm)	Morphology	Color / Pleochroism		Indices of Refraction		δ	Sign of Elongation	Extinction Angle	Dispersion Staining		Becke Line		Sign of Elongation	
					//	⊥	//	⊥				//	⊥	//	⊥	//	⊥
					NA	NA	NA	NA				NA	NA	NA	NA	NA	NA
1	Stained	39.7220	23.674	Sheet	Light brown				L M	P N							
2									L M	P N							
3									L M	P N							
4									L M	P N							
5									L M	P N							
6									L M	P N							
7									L M	P N							
8									L M	P N							
9									L M	P N							
10									L M	P N							
11									L M	P N							
12									L M	P N							
13									L M	P N							
14									L M	P N							
15									L M	P N							
16									L M	P N							
17									L M	P N							
18									L M	P N							
19									L M	P N							
20									L M	P N							
21									L M	P N							
22									L M	P N							
23									L M	P N							
24									L M	P N							
25									L M	P N							

Project #: LLH906295

Sample #: 3161015 Analyst: MMK

Date: 3/3/2020

Sample Description /

White powder stained with Iodine

Non-asbestos Material %:

	Talc	Opaques	Misc. Particles
	Carbonate		

	Slide 1	Slide 2	Slide 3	Slide 4	Slide 5	Slide 6
Slide Wt. (g) :	4.90110	4.96720	4.96960	4.95330	4.94480	4.90140
Slide + Sample Wt. (g) :	4.90360	4.96920	4.97160	4.95470	4.99410	4.90270
Final Sampe Wt. (g) :	0.00250	0.00200	0.00200	0.00140	0.04930	0.00130
R.I. Oil :	NA	NA	NA	NA	NA	NA

avg mass 0.00975

Sum Mass	AS (p/g)	AS (Wt %)	Wt %	p/g
0.05850	17	1.1E-09	4.18E-03	68.376

Type	Slide 1	Slide 2	Slide 3	Slide 4	Slide 5	Slide 6	Total
Chrysotile	0	0	0	0	0	0	0
Stained	1	2	0	1	0	0	0

#	Particle Type	Length (μm)	Width (μm)	Morphology	Color / Pleochroism		Indices of Refraction		δ	Sign of Elongation	Extinction Angle	Recorded Images	
					//	⊥	//	⊥				Dispersion Staining	
					//	⊥	//	⊥				//	⊥
1	Stained	50.4200	26.752	Sheet	Medium brown				L M	P N	NA	NA	NA
2	Stained	43.021	21.45	Sheet	Greenish-brown				L M	P N	NA	NA	NA
3	Stained	28.7	21.104	Sheet	Washed out brown				L M	P N	NA	NA	NA
4	Stained	50.852	49.19	Sheet	Light brown				L M	P N	NA	NA	NA
5									L M	P N			
6									L M	P N			
7									L M	P N			
8									L M	P N			
9									L M	P N			
10									L M	P N			
11									L M	P N			
12									L M	P N			
13									L M	P N			
14									L M	P N			
15									L M	P N			
16									L M	P N			
17									L M	P N			
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19									L M	P N			
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25									L M	P N			

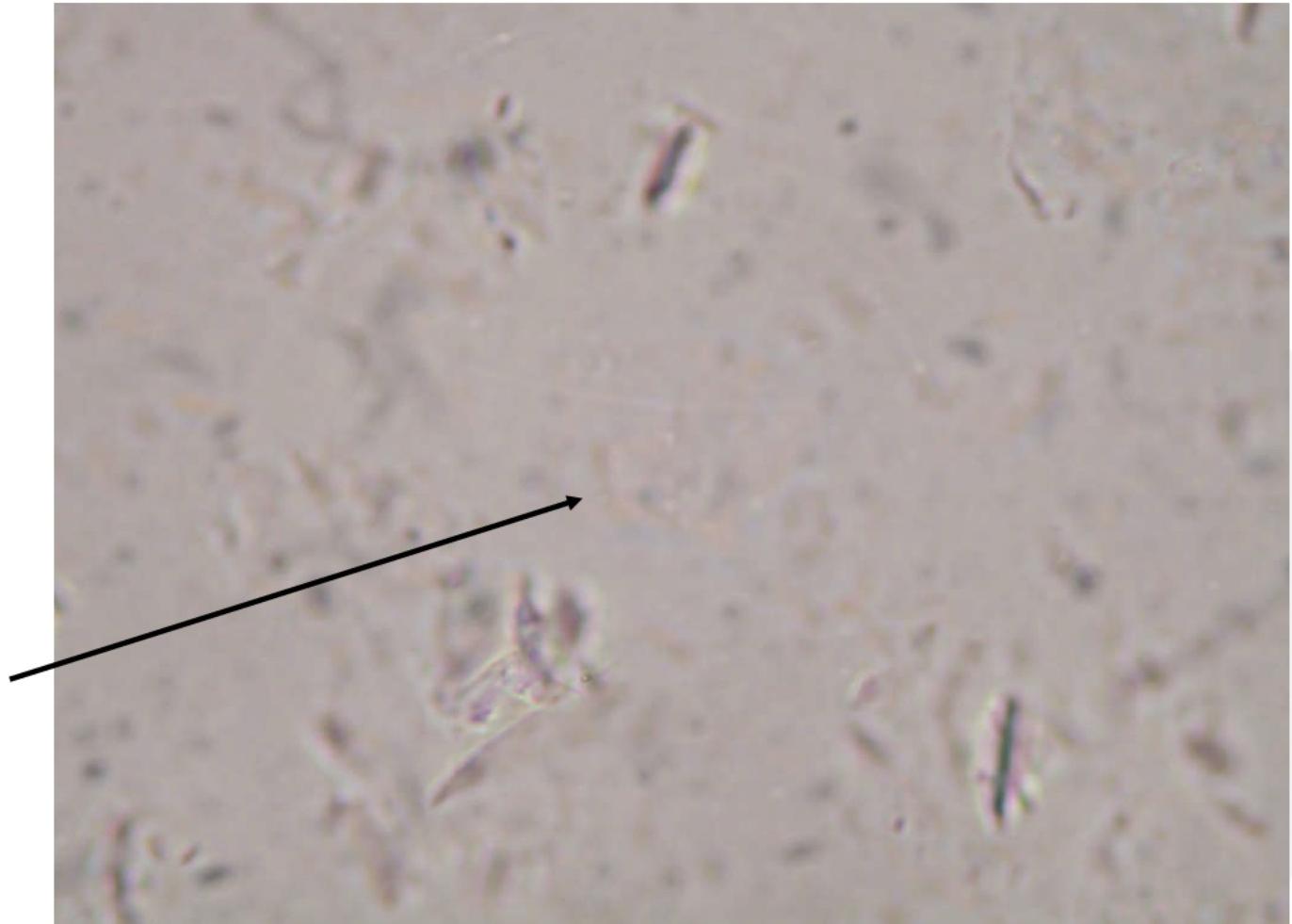


Appendix B
Refractive indices of talc in 1.586 and 1.550 liquids

Talc in 1.586 and 1.55 oil PLM

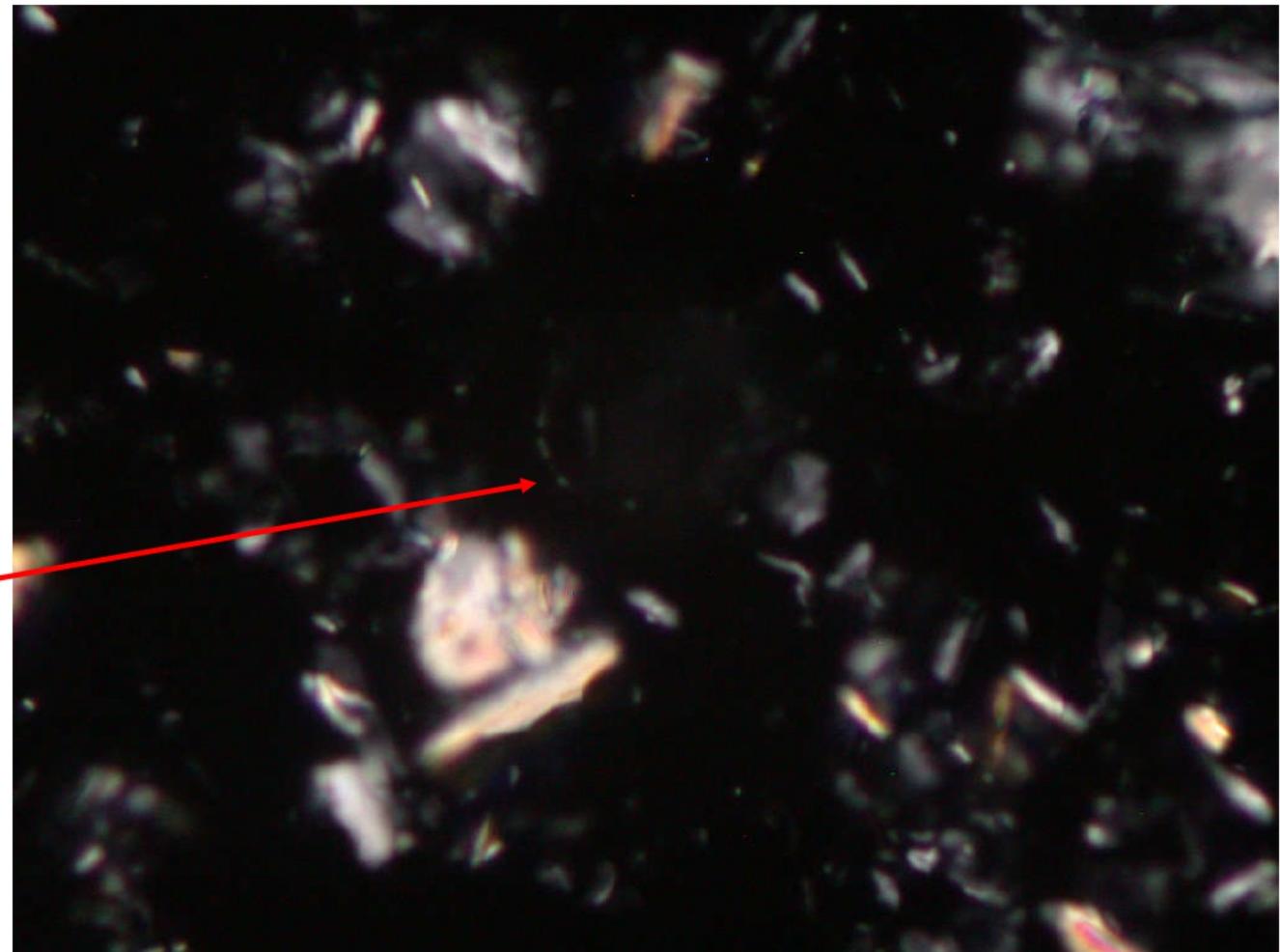
Talc on 001 in 1.584 plane polarized light

Low relief and orange and sky blue color of the becky line indicate a near match



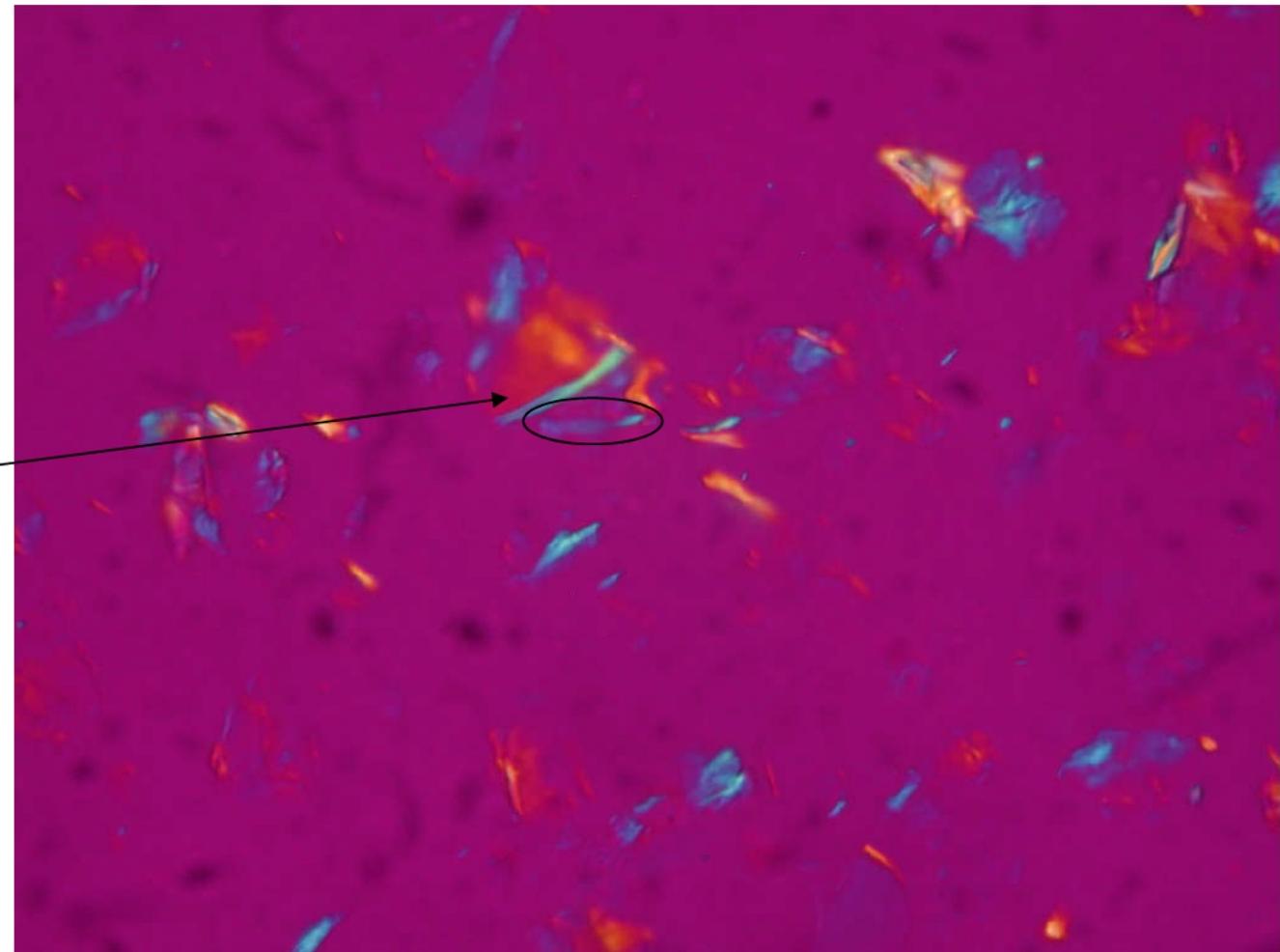
Talc on (001) in 1.584 in cross-polarized light

Low birefringence
grain supports 001
assumption



Talc on 001 with 100 section due to curled edge cross polarized light in 1.586

Sheet with edge bent, manifest by higher order retardation or blue interference color



Talc on 100 with curled edge plane polarized light in 1.586

Sheet with
edge bent,
lower edge
parallel with
lower
polarizer,
near match in
refractive
index

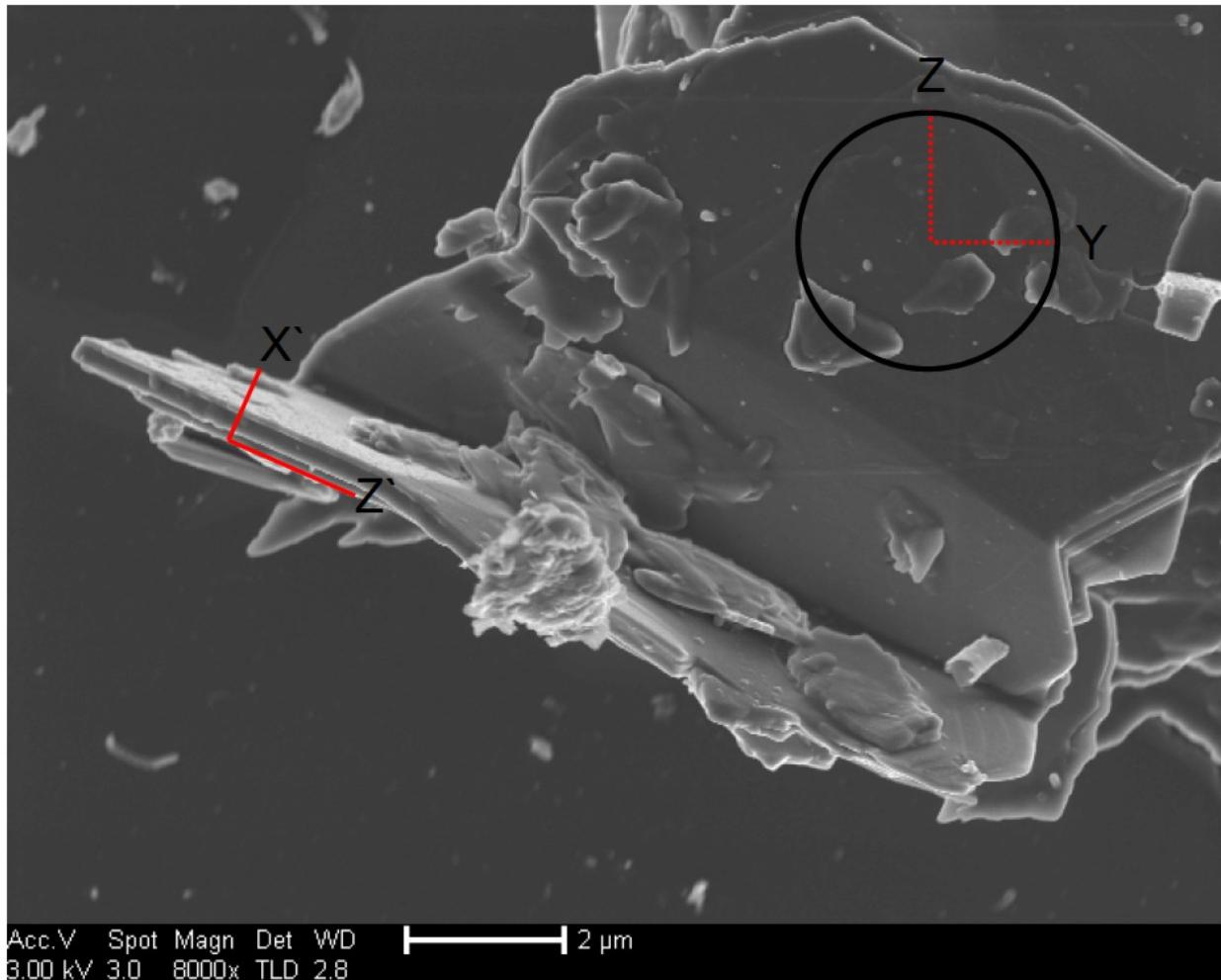


Talc on 100 with curled edge plane polarized light rotated 90 degrees in 1.586

Sheet with
edge bent,
rotated 90
degrees, high
relief = grain
<< oil



An example of the optical



X = 1.538 - 1.554

Y = 1.575 - 1.599

Z = 1.575 - 1.602

Measured 001 sections
Yield ~1.584 refractive
index values in the 001
plane. Birefringence is
small.

Folded or bent edges
yield near 1.550 refractive
index values in sections
perpendicular to the
plane of the sheets

What if central stop dispersion staining is employed in a 1.550 oil?

> 3:1 aspect ratio talc grain with X parallel with the lower polarizer showing near match colors.

